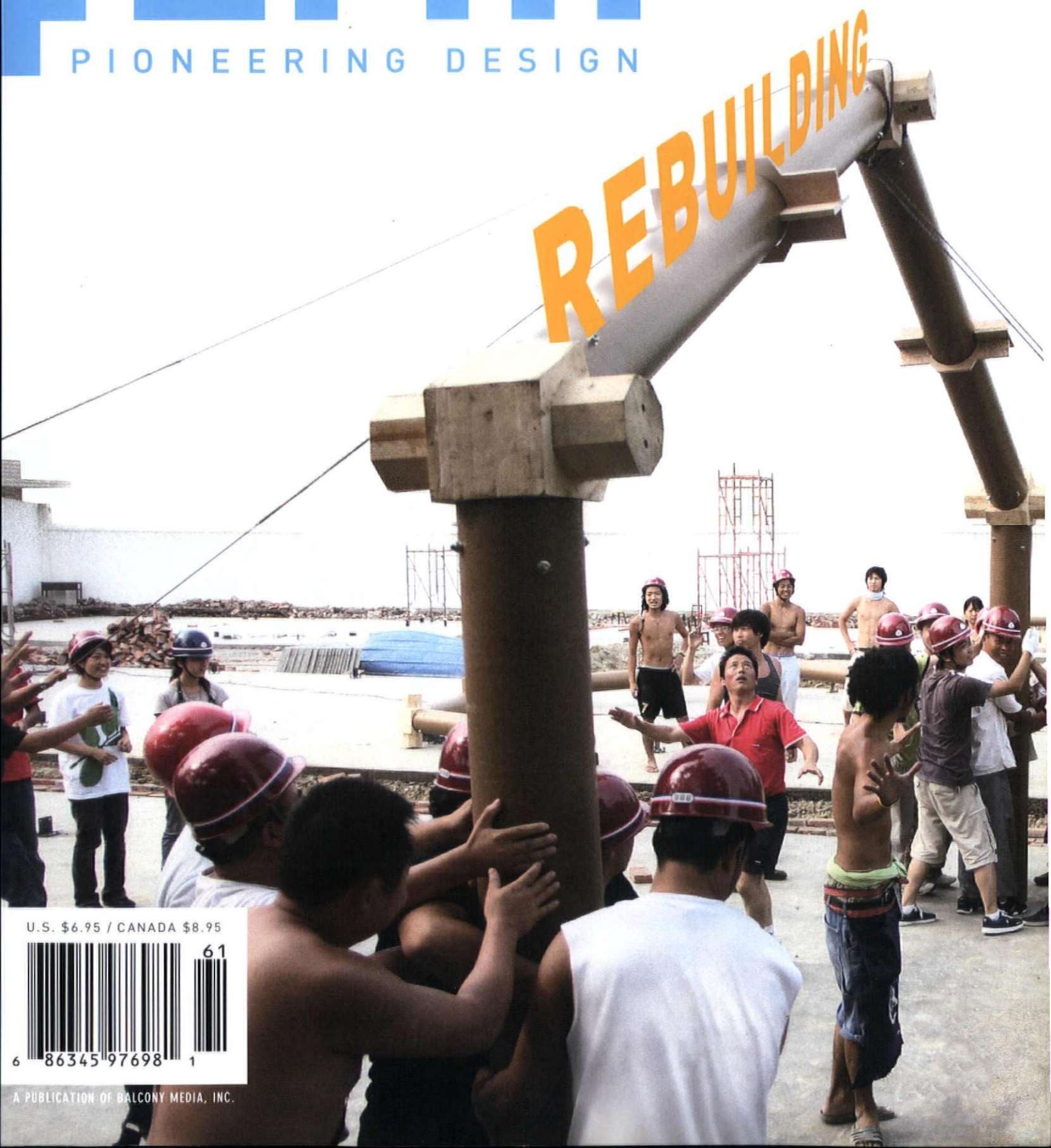


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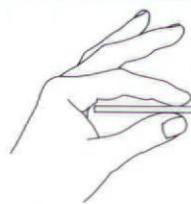
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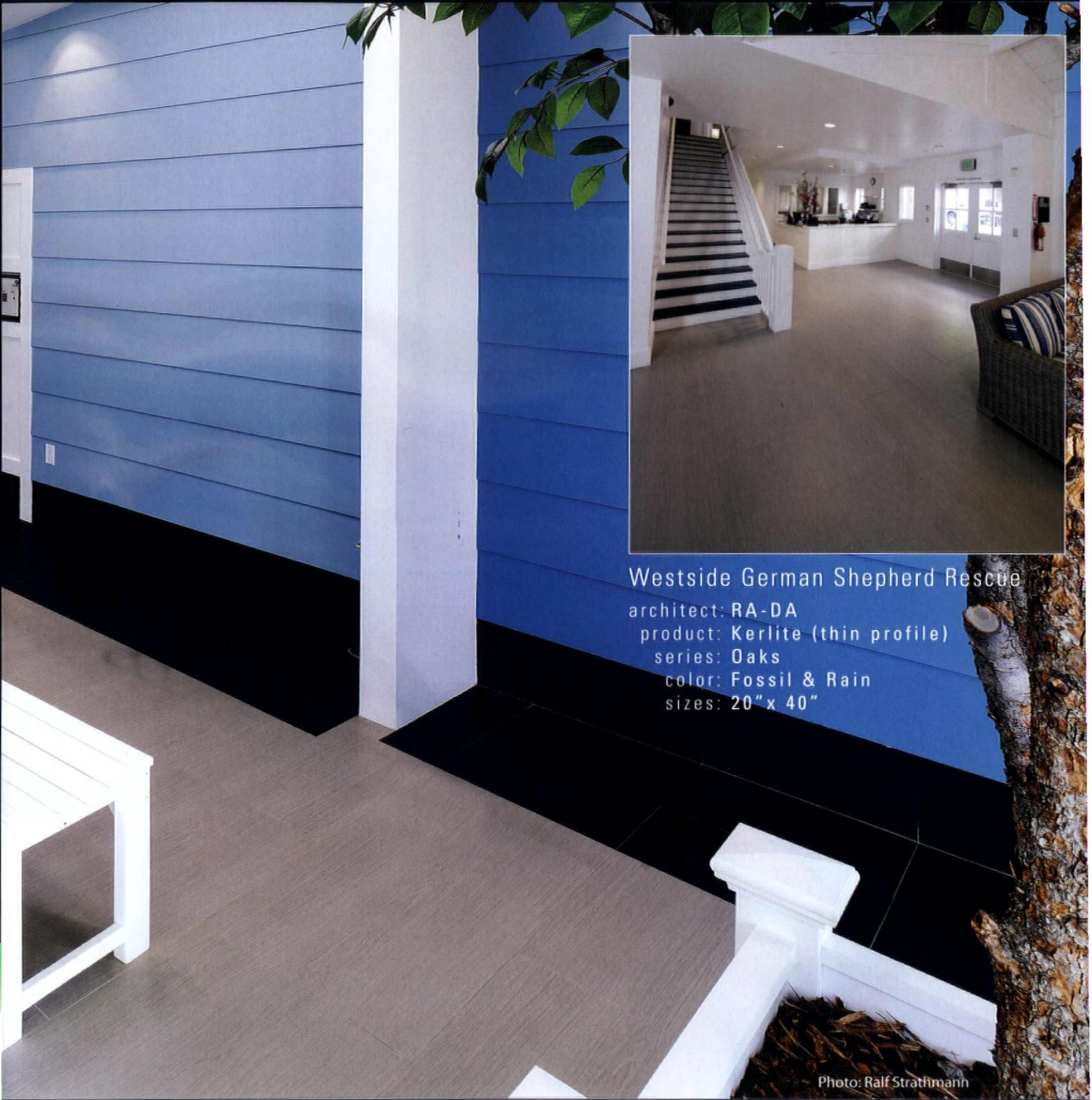
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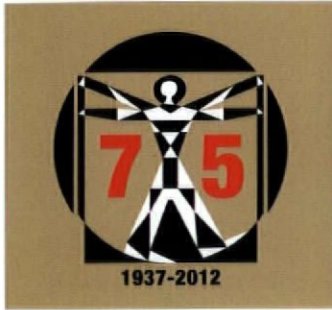
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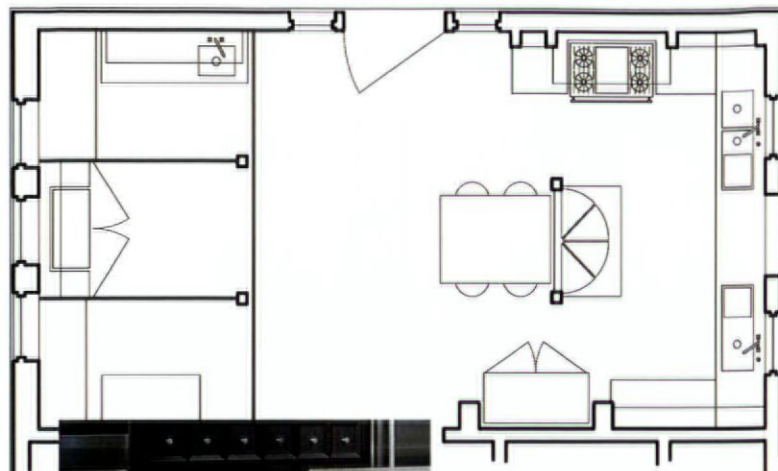
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# FORM

PIONEERING DESIGN

MAY/JUNE 2012



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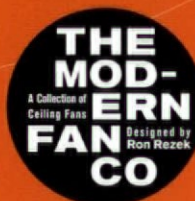
BY PETER SLATIN



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**CEO/Publisher** Ann Gray, FAIA FRICS

**Editor in Chief** Caren Kurlander  
caren@formmag.net

**Advertising Sales** Dee Kaplan  
dee.kaplan@gmail.com  
818.956.5313 or 310.821.0746

**Art Direction + Design** studiofuse.biz

**Office Manager** Sheila Mendes-Coleman  
sheila@formmag.net

**Online Content Manager** James Brasuell  
jbrasuell@gmail.com

**Contributing Writers** Yuki Bowman  
Michael Franklin Ross, FAIA  
Peter Slatin

**Reprints** Peter Shamray  
Navigator Cross-media  
626.222.5646  
peter@navcm.com

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512 E. Wilson Avenue, Suite 213, Glendale, California 91206  
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Cover image: Hualin Temporary Elementary School in Chengdu, China.  
Photography courtesy of Shigeru Ban Architects.





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# Building Excitement

A conversation on construction with Paul Matt

**FORM** MAGAZINE TOASTED THE NEW YEAR AND ITS LOYAL supporters with a festive event at the Poltrona Frau/Capellini showroom in West Hollywood. Guests were treated to a fascinating talk between **FORM** publisher Ann Gray and Paul Matt, CEO of MATT Construction, who held the audience captive with his wisdom learned from decades in the construction business and thoughts on working with industry titans such as Frank Gehry, Louis Kahn and Moshe Safdie. Guests enjoyed hors d'oeuvres furnished by the showroom, and the magazine's long-time sponsors PAMA and IZZE Beverage Company provided drinks. Other sponsors included Turi Door, Steel City Glass, Letner Roofing and A.J. Kirkwood.



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No one likes to think of worst-case scenarios. But when disasters—either natural or man-made—happen, people need to take action. The pivotal first steps of finding shelter, protection and relief can provide a space, both emotional and physical, for the bigger steps of beginning to rebuild a home, a city or a country. In this issue of FORM, we'll see how architects are playing an important role in every step of that process.

Michael Franklin Ross, FAIA, principal with HGA Architects and Engineers, reports on the innovative and prolific disaster recovery work of his former student Shigeru Ban, who transforms paper tubes into museum canopies and emergency partitions with equal grace (page 32). In response to the 2010 earthquake in Haiti, San Francisco firm BAR Architects worked with Architecture for Humanity to develop a system for rotating staff in and out of the country

for eight months, designing and helping to build firsthand a much-needed school (page 36). And closer to home, Peter Slatin writes of the slow-but-steady progress being made at the World Trade Center site a decade after 9/11 (page 40). A Cal Poly Pomona student envisions a way to guard Japan's rice fields against future tsunamis (page 16), while Janah Risha, SE, offers steps to protect Southern California from the ongoing threat of earthquakes (page 18). In our Workbook section (page 20), designers offer a variety of inspiring temporary shelter options, which "give those affected by disaster situations a better quality of life," says Molo's director Todd MacAllen, who believes the short-term solutions could have long-term benefits. "We feel that well-designed shelters provide better hope for well-designed permanent housing and cities."



Carly Hebert

A handwritten signature in black ink, reading "Caren Kurlander".

Caren Kurlander  
Editor in Chief



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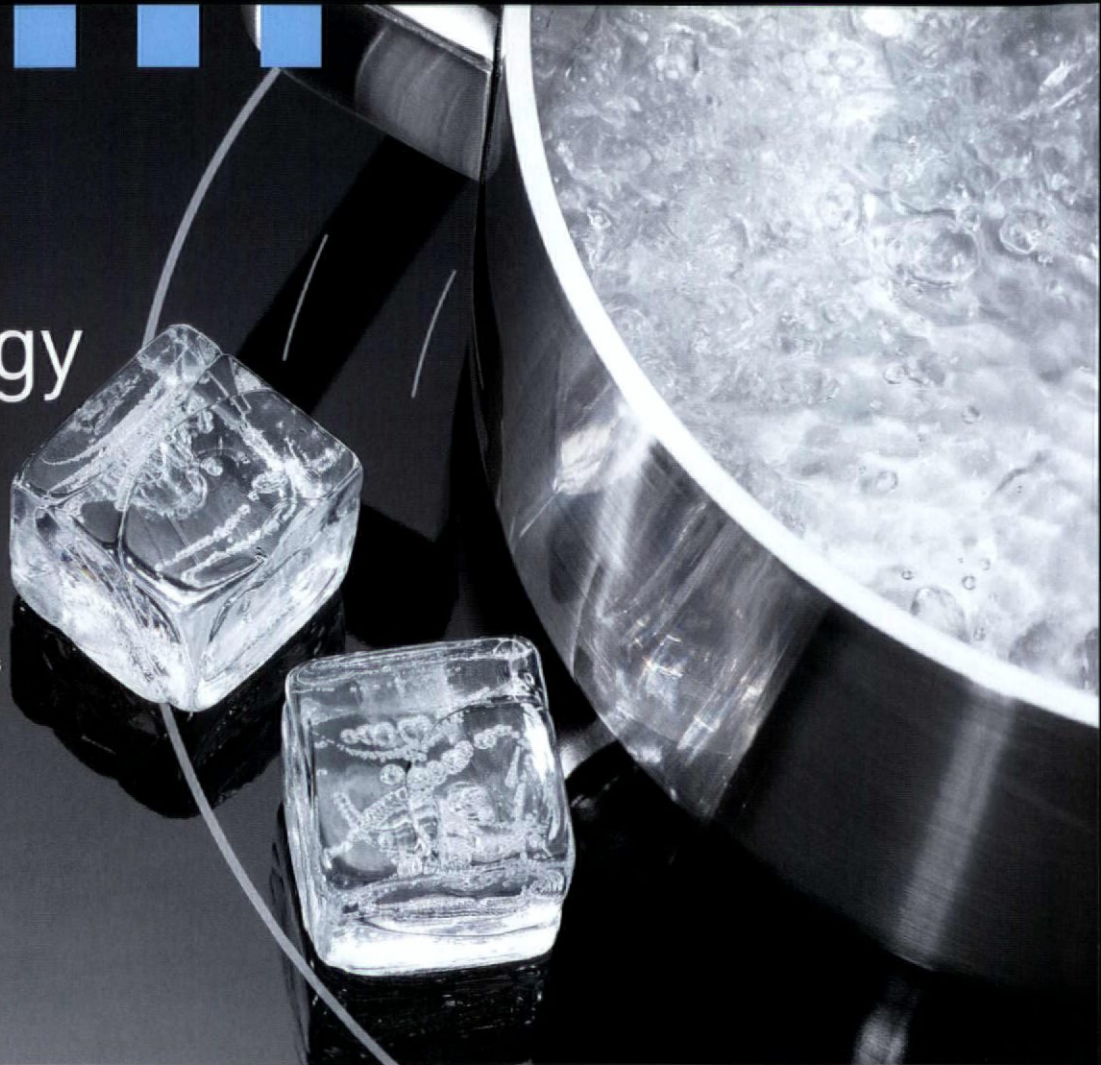
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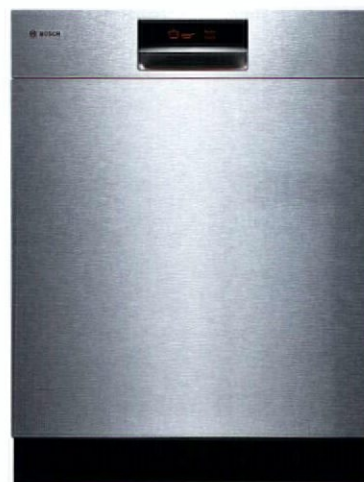
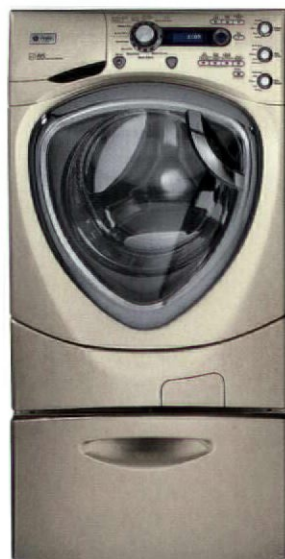
The new **Torre** refrigerator by Fagor showcases both the energy efficiency and European styling the company is known for. The slim 24"w x 24"d x 79"h design is available in stainless steel for \$1999 and black for \$1799. A built-in LCD control panel helps maintain pre-selected temperatures, keeping energy consumption down.

[fagoramerica.com](http://fagoramerica.com)

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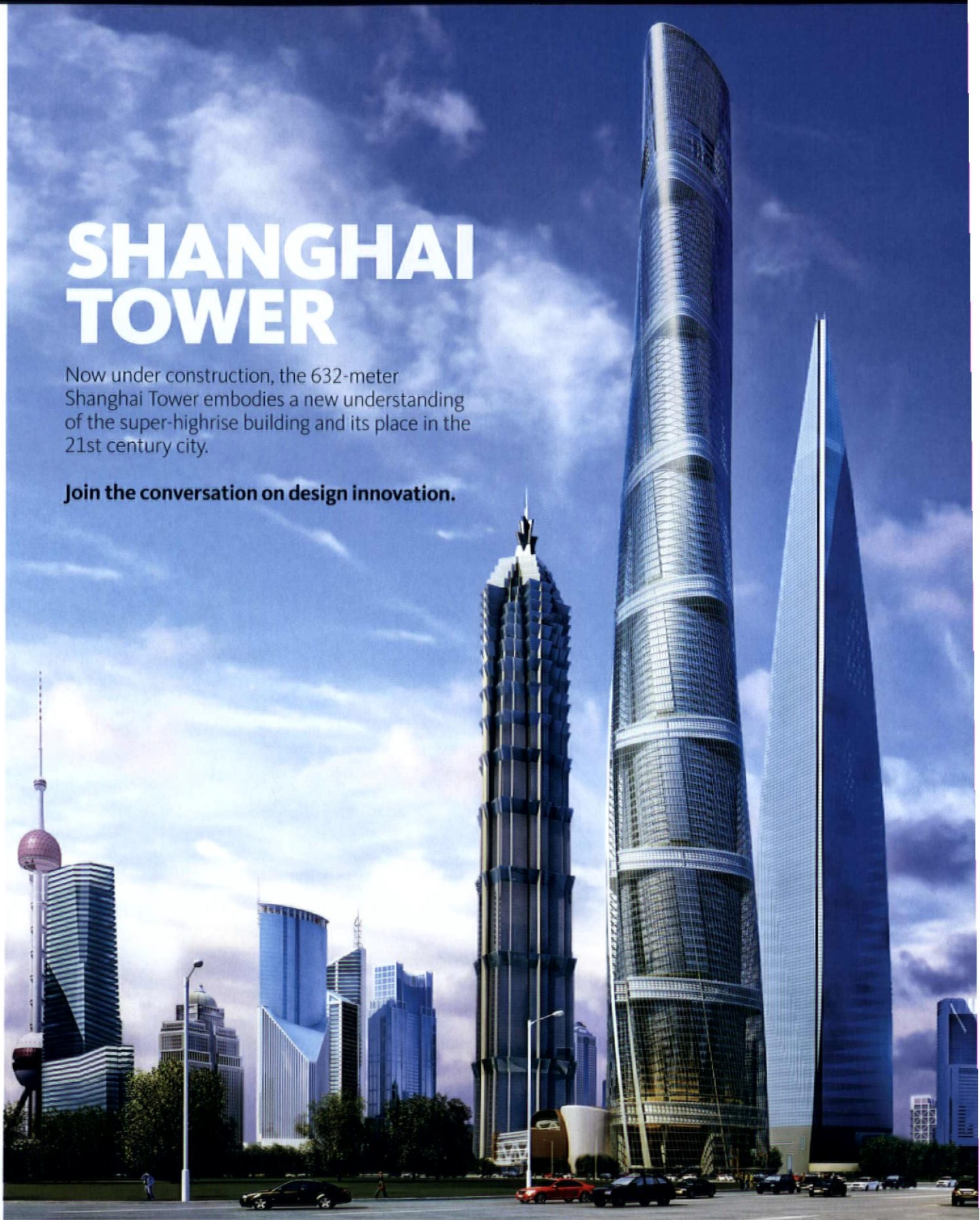
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## Rooftop Rewards

A sustainable design for the Union Rescue Mission enriches lives on Skid Row

When Jessica Patterson, ASID, LEED AP, principal of JLP Design, began designing the rooftop of Union Rescue Mission, located on Skid Row in Downtown Los Angeles, she didn't expect it to be a career-defining experience, but that's exactly what it turned out to be. The mission, one of the largest of its kind in the U.S. and the oldest in the city, offers food, shelter, medical care and vocational training to people affected by homelessness. Patterson was asked to transform the 25,000-square-foot rooftop space into a much-needed respite and safe-haven for the mission workers and the men, women and children in residence.

"It's really an interesting experience," Patterson says of standing on the roof of the five-story building. "It's this quiet, serene area overlooking Downtown Los Angeles, but when you look down, it's a completely different picture. Skid Row is a very scary place." To counter the gritty locale, Patterson created a welcoming atmosphere by working with vivid colors inspired by the skyscrapers and historic structures surrounding the building. "I wanted the background of downtown Los Angeles to be part of the design," explains Patterson, who painted the surrounding walls with a low-VOC Dunn-Edwards paint in a bright orange hue.

The paint helped establish a cheerful tone for the space, but it was also the first step towards making the environment as green as possible. "I wanted to make sure that it was

sustainable, not just for the health of the residents, but to lower overhead costs as well," explains the designer, who created a variety of sitting areas throughout the large space using furnishings from Loll Designs. The bright green chairs and benches, made from recycled milk bottles, offer comfortable places to gather, while their heft discourages vandalism. To help create visual divisions within the open rooftop, Patterson worked with UltraGlas to design dividers made from metal screens filled with recycled green and orange glass. She also specified LED lighting from Kenall to help keep the non-profit's energy costs down.

Patterson's flexible design accommodates everything from small lunchtime gatherings to large BBQs hosted by the mission's CEO, Rev. Andy Bales, to fundraisers to extra sleeping space during times of heavy occupancy. But aside from the sitting areas, Patterson also created a section where square-foot-gardener JoAnn Carey can teach residents about planting fruits and vegetables and a separate area outfitted with a playground for the children living at the mission. Working with USSA, the designer chose a play structure, built from recycled milk bottles, and positioned it on a soft surface made from 919 PTEs (passenger tire equivalent), which were bound into a mulch alternative.

Now, what was formerly an empty, unused space is a functional, sustainable and enriching addition to the facility. Patterson witnessed the profound impact of her design firsthand



All photography by Howard Han

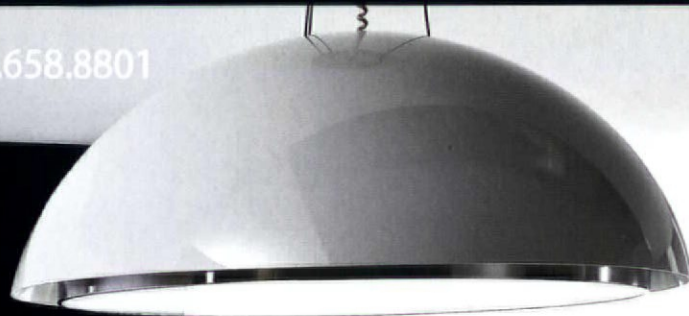


during the ribbon-cutting ceremony, as the playground was flooded with happy, joyful children. "To see these kids, who've lived with violence and fear so much of their lives, have a place to play, was the most rewarding moment of my career."

—Caren Kurlander



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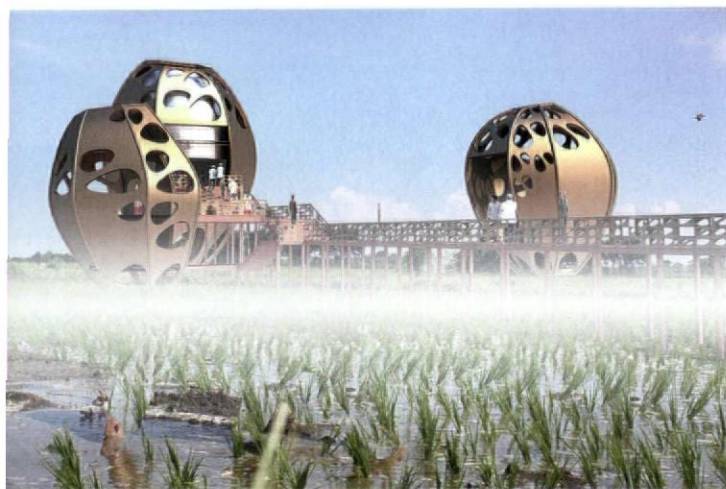
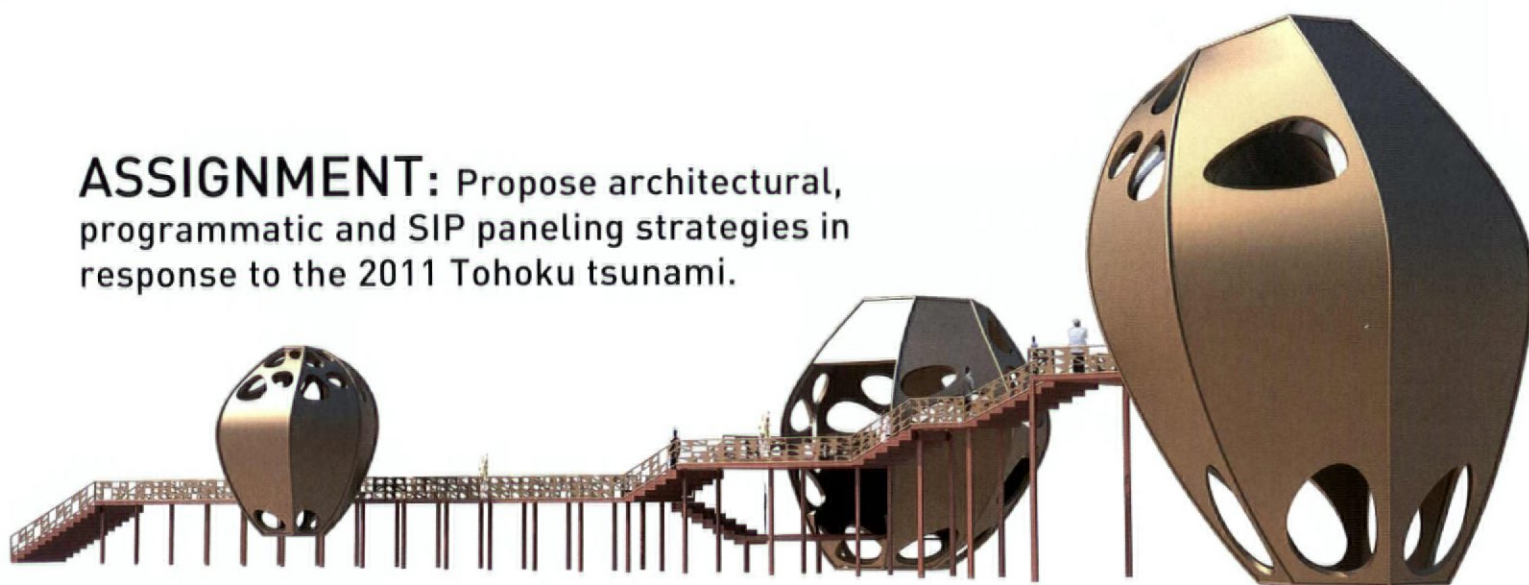
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– Oscar Niemeyer, architect*

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**ASSIGNMENT:** Propose architectural, programmatic and SIP paneling strategies in response to the 2011 Tohoku tsunami.



**STUDENT NAME:** Fransiscus Robin Samara

**SCHOOL:** Cal Poly Pomona

**MAJOR:** Architecture

**ADVISOR:** Juintow Lin

**PROJECT TITLE:** Rice Shrine/Reserve

**PROJECT DESCRIPTION:** The design is a small Shinto shrine-like complex over a rice field. It continues the shrine's traditional prolonged approach with three sequential buildings and adds a gradual ascent. The focal point is the main prayer hall, a hybrid between a rice shrine and a rice reserve. It pushes the formal capability of the SIP panel by using curvature in one direction and double shelling. The concept and the curvature are derived from the construction make-up of rice, which has strips of an outer shell covering a polished inner shell.

**DESIGN TOOLS:** Rhino 3D with PanelingTools and Grasshopper plug-ins for modeling

**INSPIRATION:** The 2011 Tohoku tsunami wiped out much of Ishinomaki's rice field, and it will take years before the existing soil becomes as productive as before. I wanted to explore a project that would provide spiritual support for the farmers, so that they could remain resilient in the face of disaster. I also wanted to explore logistical support in the form of an emergency rice reserve if another disaster should strike.

**DESIGN HEROES:** Wolf Prix, Bernard Tschumi, Rem Koolhaas

*To see more disaster recovery work by Cal Poly Pomona students, visit [FORMmag.net](http://FORMmag.net)*



# AIA LA EVENTS

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Y

05.06

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# ENGINEERING FOR EARTHQUAKES

Janah Risha, SE, president of Risha Engineering and the Structural Engineers Association of Southern California, discusses preparing for The Big One

## How prepared is Southern California for another big earthquake?

Buildings that have been designed and built per the newer codes should perform adequately, but it's important to realize that the minimum seismic performance targets in the newer codes have the goal of collapse prevention, allowing the exiting of occupants. Some structural damage is to be expected, possibly without the ability of it being repairable.

However, there are a number of older building types that have proven to be susceptible to large earthquakes. These include the unreinforced masonry (URM) bearing wall buildings, the low-rise residential buildings with open, tucked-under parking, the pre-1976 rigid wall, flexible roof type of structures, and the non-ductile concrete moment frames. These structures can be severely damaged when subjected to a long duration of strong ground shaking.

## What lessons were learned from the Northridge earthquake?

We learn from every earthquake and Northridge was no exception. We witnessed some catastrophic collapses, unexpected and expected failures, and some successes.

Several steel moment frame buildings sustained damage at the beam-to-column connections. The Getty Center, which was under construction at the time, was one of the first ones to raise the alarm. Since then, substantial modifications have been enacted in the steel design codes, to ensure that this type of damage does not occur again.

## Is there anything Southern California can learn from the recent earthquakes around the world?

Perhaps we can learn the most from the Chile and New Zealand earthquakes, since they have modern buildings codes, with some similarities to ours. Some lessons were re-learned, for instance adhering to good structural design principles such as redundancy, minimizing irregularities and discontinuities, bracing and anchoring of non-structural elements and ensuring a continuous load path. The reliance on computer modeling may pull designers away from these principles. We can justify anything with computer modeling, but should we?

Another important lesson from the New Zealand earthquake was the inaccessibility to structural drawings due to the area being cordoned off. With the available digitizing of documents, storing building records at remote locations would allow post-earthquake evaluators to understand the impacted structures, improving search and rescue operations.

## What are the biggest problems you see facing Southern California?

Older structures designed and built under the older codes and damage to non-structural elements such as ceilings, ducts, shelves,

appendages will be extensive. Anchoring and bracing these elements to the structure will go a long way in minimizing injury and economic losses. Unfortunately, mitigation and retrofitting is not popular. The shortsighted view is that mitigation can be expensive and intrusive and that it will trigger other compliance and upgrade issues such as with the Americans with Disabilities Act (ADA). Nonetheless, the need to mitigate is urgent.

## How can bracing the interior elements help?

These elements, including lighting, heating and air conditioning, shelves, ceilings, ducts and fire sprinklers, provide the services to and within the building. Most of them are hanging from the ceiling or sitting on the floor. If they are not braced and anchored, they can detach from the supporting structure and injure or in some cases kill the occupants. At the very least, damage to these elements can render the building non-functional and the repair costs can be high.

## Where does the responsibility fall for making this happen?

In new construction, it is typically a joint responsibility between the members of the design team. As is the case in any building project, the architect is responsible for the coordination between the mechanical, electrical and plumbing engineers on the one hand and the structural engineer on the other. The structural engineer prepares calculations and details on where and how to anchor and brace these elements. In existing construction, it is up to the owner to take the initiative and hire a structural engineer to perform the documentation and retrofit design.

## Overall, how can these issues be resolved?

It is incumbent upon structural engineers, architects, academicians, researchers, building officials, law enforcement, first responders and elected officials to improve our collaboration and to continue to drive the message for the need to mitigate. The initial steps are the development of practical legislation that allows incremental retrofitting measures while incentivizing the building owners, whether be it by relaxing some development rules or by the use of tax credits.

The 2008 ShakeOut earthquake scenario, which describes a large event on the southern end of the San Andres Fault, forecasts 2,000 deaths, 50,000 injured, and \$200 billion in damage, if we are not proactive in mitigating seismic hazards. It is up to all of us to ensure the preferred outcome—an effective recovery.

—Interview by Caren Kurlander



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# Gimme Shelter

Envelope-pushing designs provide short-term refuge

For Workbook credits, please see page 43.





## Fragile Shelter

Location: Sapporo, Japan

Designer: Hidemi Nishida Studio

Website: ndmnsd.com

Japanese artist Hidemi Nishida is interested in creating shelter—in a manner of speaking. Rather than looking at shelter as a way of protecting us from the elements, he sees it as a way to heighten our awareness of what we're being protected from.

For his latest project, *Fragile Shelter*, Nishida designed a temporary structure that perches above the snow-covered ground of the Sapporo Art Forest in Japan. Nishida designed a series of six timber-framed volumes beneath a pitched roof. The volumes are all at slightly different levels, hovering just above snow-level, which gives natural steps to the interior wood floor. The simple structure is wrapped with a light-weight plastic, which provides just enough material to offer a separation from the outside, but not enough to feel completely secure. In selecting the simple but unexpected materials, Nishida looked for things that would be easy to use and cheap, not too strong, but functional enough to make it possible for a visitor to spend a few hours in the winter woods.

"It's a kind of shelter that harkens back to a primitive age," says Nishida. "It's easy to feel what might be a threat lurking in the surrounding woods, so people inside have to make a cozy atmosphere together against the wild world." The interior is appointed with a single stove, and the end of the structure offers a perch for taking in the surroundings. During its time in the forest, the shelter has been used as a haven for small gatherings, kindergarten lunches and as a snow-tracking base.

Photography by Anna Nagai





## Digital Origami Emergency Shelter

Designer: LAVA

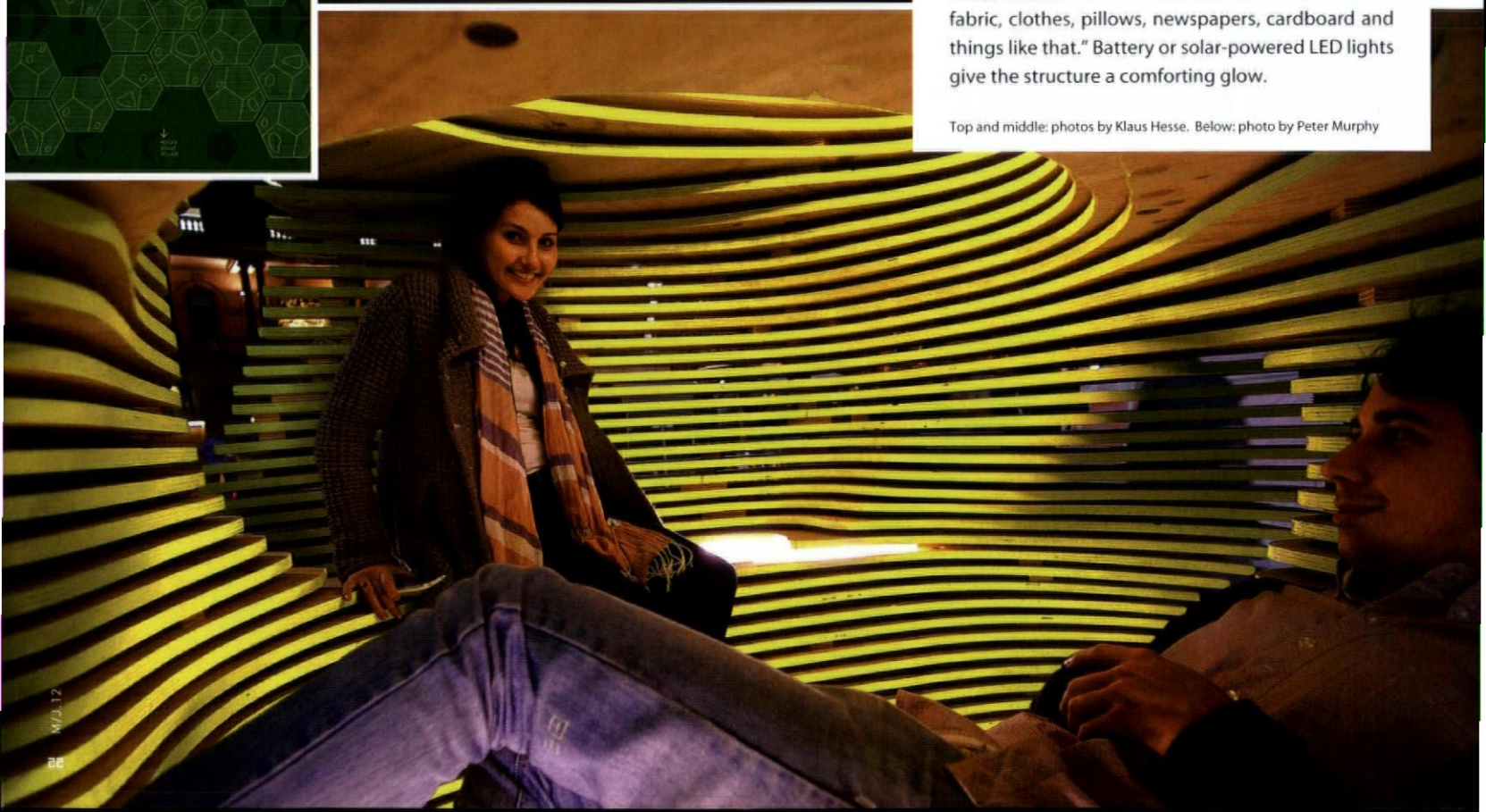
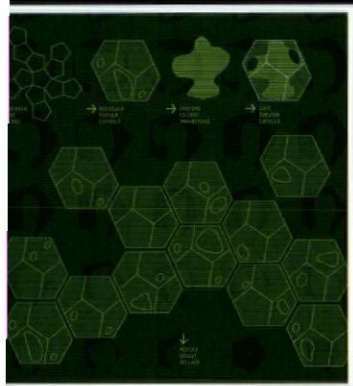
Website: l-a-v-a.asia

"Architects always represent the state of their society, the materials, the technologies and the knowledge available at the time," says Chris Bosse, director with the global firm LAVA (Laboratory for Visionary Architecture). "In these strange and sometimes unsettling times, such as financial crisis, tsunami, hurricanes, etc, architecture has to react." LAVA did react with the Digital Origami Emergency Shelter.

Inspired by the Japanese Metabolist movement, which "tried to learn from nature to create living cities out of molecule-like minimalist structures that could be mass-produced and stacked," explains Bosse, the shelter would offer a design that's "simple in its outer shape, but freeform and suited to the human body on the inside." LAVA's prototype—shown as part of the Emergency Shelter exhibition in Sydney, Australia—was constructed with CNC-cut plywood stacked into a capsule, which is sculpted inside to sleep two adults, one child and include a space for eating and reading.

In an emergency situation, the structure could be flat-packed, dropped off by helicopter and then folded into shape by one or two people. The interior would be assembled using locally found material. "This is of course the critical point after a tsunami," notes Bosse. "What's available? We would assume fabric, clothes, pillows, newspapers, cardboard and things like that." Battery or solar-powered LED lights give the structure a comforting glow.

Top and middle: photos by Klaus Hesse. Below: photo by Peter Murphy





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## FoldFlatShelter

Designer: Form-al

Website: form-al.de

Designer Adrian Lippmann, founder of the German firm Form-al, had been working with aluminum composite materials on furniture designs, when he realized the sturdy, flexible material might have larger implications. "I thought, why not design a little building out of it," explains Lippmann, who "wanted to build a house that was more like a product than strict architecture." From this idea, the FoldFlatShelter was born.

Lippmann's shelter is designed to ship flat in a package weighing 551 pounds to areas impacted by natural disasters as a stronger, more stable alternative to traditional fabric tents. "A modern CNC (computerized numerical control) center is able to mill hundreds of shelters a day," he says, and the structure can be assembled by two people in five hours with screws and U-sections. Made from Dibond or Alucobond, the design consists of interlocking pyramids, which come together in a self-supporting frame. Measuring 86 square feet and 9'4" high, the shelter features a floor of HeliPAN, a Hylite door and a window of acrylic glass.

Aside from offering basic protection from the elements, the shelter would allow for the safe use of a stove and collection of rainwater from the rooftop. Making it even more home-like, the cardboard packing is printed with patterns showing how to cut out and fold simple pieces of furniture. "The design should be extraordinary in terms of showing people in need a bit of light, beauty and quality," says Lippmann, "instead of just cheap, grey solutions."

Photography by Adrian Lippmann. Renderings by Adrian Bachmann.







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## Pilgrim Route Shelters

Location: Jalisco, Mexico

Designer: Luis Aldrete

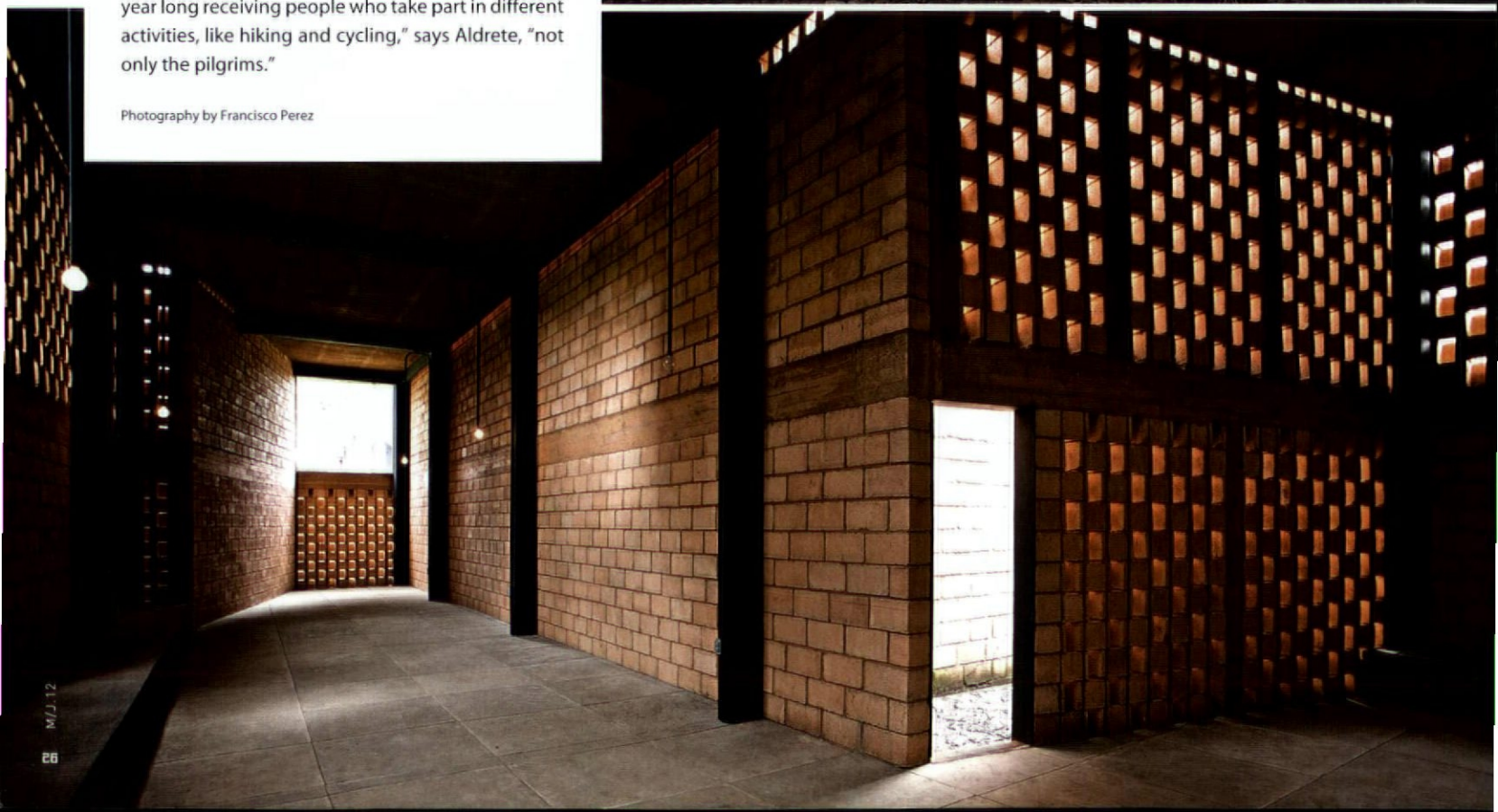
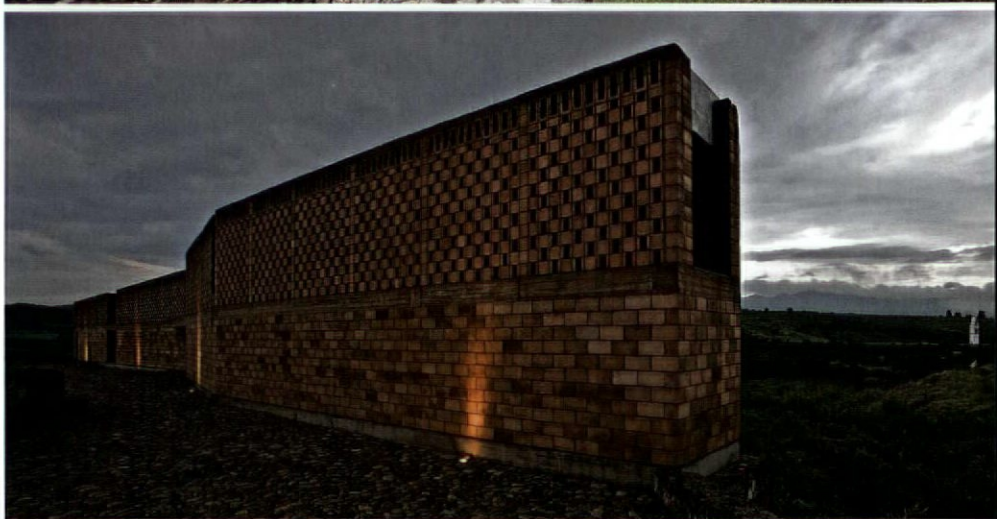
Website: [luisalldrete.com](http://luisalldrete.com)

Each year in the Mexican state of Jalisco, over two million people embark on a religious pilgrimage beginning in the town of Ameca and ending 73 miles later in Talpa de Allende to see the Virgin of Talpa. To make the route safer for the pilgrims, the government of Jalisco commissioned a series of shelters, viewpoints and sanctuaries along the path. Guadalajara-based architect Luis Aldrete, with project team Magui Peredo and Cynthia Mojica, designed two shelters along the path, which features other structures by firms from Mexico, Switzerland, Chile, and the Chinese artist Ai Weiwei.

"The strategy consists of base modules, which make the project capable of adaptation and growth," says Aldrete, who designed the two buildings using pigmented concrete brick to mimic the colors of the region. He also looked to the area for inspiration in shaping the forms. Lattice walls "reflect the play of light and shadows originally created by the roofs made of oak leaves used in most of the surroundings," he explains. Local stones were used as foundations for the shelters and to define the entrances.

The two elongated structures—measuring 3,615 square feet and 6,973 square feet—provide a respite not just for the pilgrims, but also for outdoor enthusiasts. "The idea is that the shelters work all year long receiving people who take part in different activities, like hiking and cycling," says Aldrete, "not only the pilgrims."

Photography by Francisco Perez





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## Softshelter

Designer: Molo

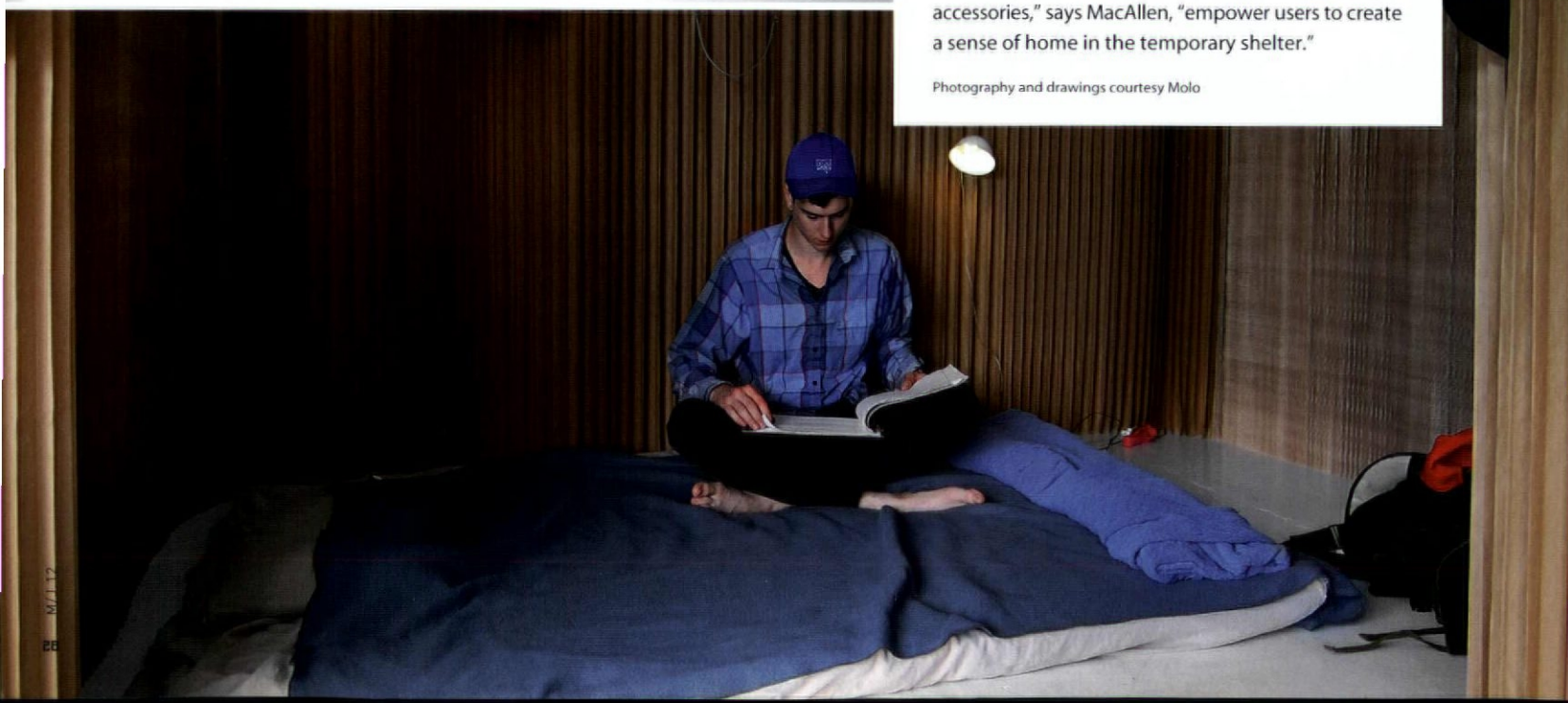
Website: [molodesign.com](http://molodesign.com)

"If disaster shelters are not designed thoughtfully, it's a lost opportunity," says Todd MacAllen, lead designer/director of the Vancouver-based design studio Molo. "Well-designed shelters give those affected by disaster situations a better quality of life, and we feel that well-designed shelters provide better hope for well-designed permanent housing and cities."

MacAllen and Molo co-founder Stephanie Forsythe have developed an elegant solution for helping those in need during those unsettling and often unpredictable times. The Softshelter consists of "a flexible freestanding partition system that can expand and contract to freely shape more intimate spaces within larger open areas," says MacAllen. After working on variations and earlier versions of similar products for over a decade, the duo has adapted the Softshelter specifically for post-disaster conditions. The walls stand six feet tall by one foot wide and are made from kraft paper treated with a non-toxic, salt-based fire retardant. When compressed for shipping, the wall measures less than two inches, but it can expand to fifteen feet when deployed. Magnetic panels connect ends to form rooms.

"Softshelter walls can be used to occupy large buildings that have not been destroyed in the event of a disaster," explains MacAllen. "The idea is that they will provide personal, private space for those using the building as shelter, but the walls can easily be folded up or re-configured to facilitate any use, for example as clinic rooms or command stations." Molo has also recently introduced accessories including a Tyvek hanger, to keep wet items away from the paper walls, and an LED light. "These simple accessories," says MacAllen, "empower users to create a sense of home in the temporary shelter."

Photography and drawings courtesy Molo





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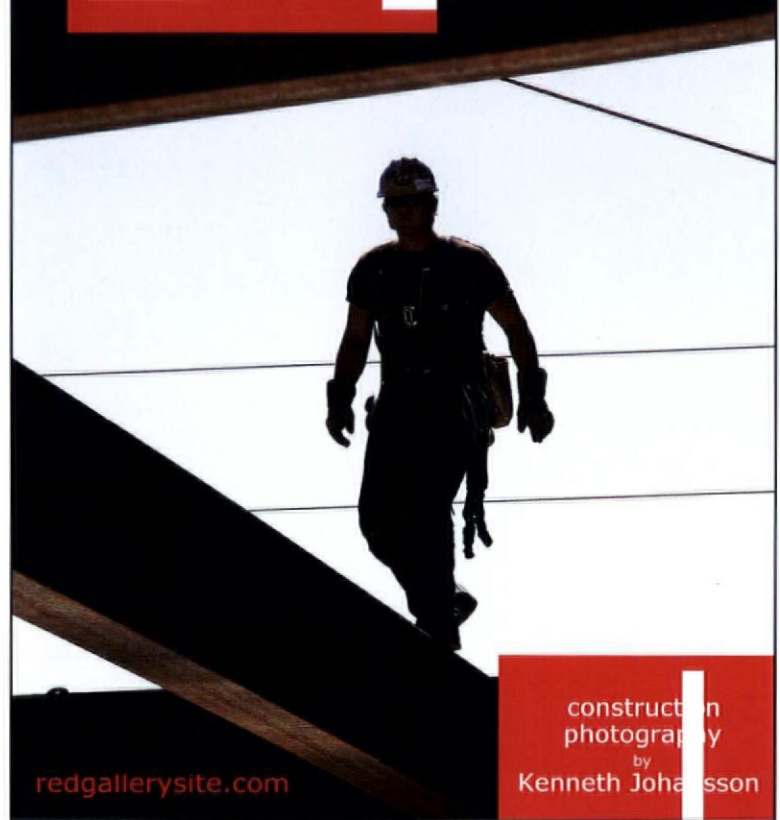


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REBUILDING



# RECOVERY BY DESIGN

In an exclusive report for FORM, MICHAEL FRANKLIN ROSS, FAIA, connects with former student and world-renowned architect Shigeru Ban to write of his ongoing passion for disaster recovery work.







**SHIGERU BAN, HON AIA, THE INTERNATIONALLY** acclaimed, award-winning architect, continues to expand his portfolio through his humanitarian disaster relief designs for people around the world. For nearly twenty years, his creativity has served those often unable to hire an architect. From Africa to New Zealand, from Turkey to China, from Europe to Japan, Ban has given the dispossessed a temporary home and the distraught a place to find relief, solace and spiritual calm.

It all began in 1994 when Ban made a visit to Geneva to meet with the United Nations High Commissioner for Refugees (UNHCR). "I was looking for opportunities to do something to help the public," says Ban, who had seen some disturbing images of the refugees in Rwanda. The UNHCR was sending aluminum poles and plastic sheets to the area, but the two-million-plus refugees were selling the aluminum poles and cutting down trees to build shelters, causing vast deforestation. Ban proposed using paper tubes instead of aluminum. The UN hired him to develop the concept further and build simple, cost-effective shelters.

Ban developed his interest in paper tubes during his student days, when he was

determined to develop his own aesthetic approach. "I was thinking how to invent my own building system," he explains. "I didn't want to follow the fashionable style of the day. So I explored ideas and discovered that paper tubes were much stronger than wood or bamboo. Paper tubes, as an industrial material, are strong and consistent. I was more influenced by architects and engineers who invented their own structural systems, like Bucky Fuller and Frei Otto."

In 1995, after Ban began working with the UNHCR, the great Hanshin earthquake struck Kobe, Japan. Ban and his students built temporary shelters out of paper tubes and brightly colored plastic beer-bottle crates for Vietnamese living in Kobe. Later Ban convinced a local Vietnamese priest to let him build a church out of paper tubes to replace a church that had burned down in the earthquake. This began a pattern of building shelters for families and spiritual environments for communities. Since Kobe, Ban has designed churches and cathedrals for disaster stricken cities from Italy to New Zealand.

Ban has a place in his heart for those affected by disasters, but he doesn't have a separate architecture for relief work. His

In addition to his celebrated commercial work, architect Shigeru Ban makes designing relief projects in disaster-stricken areas a regular part of his practice.

OPPOSITE AND ABOVE: After the 1995 earthquake in Kobe, Japan, Ban created a church that incorporated 58 paper tubes—his material of choice.







"I was disappointed that architects only work for the government, the wealthy and the privileged. I wanted to help the general public and people who have no choice."

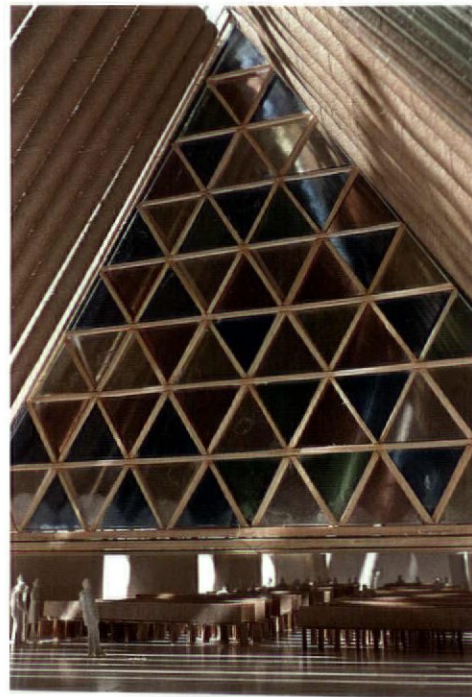
— SHIGERU BAN

design philosophy is to, "always use existing materials differently." He has come to be identified with an architecture that takes common materials and makes uncommonly beautiful things. He first employed paper tubes in 1986 as part of an exhibition design on the work of Alvar Aalto for an installation programmed by the Museum of Modern Art (MoMA) in New York. He has since used paper tubes for many creative concepts including the colonnade within the Nomadic Museum in New York, Santa Monica and Tokyo (2005-2007); the Paper Bridge across the Gardon River in the south of France (2007); the Paper Arch at MoMA's Abby Aldrich Rockefeller Sculpture Garden in New York (2000); and the Japan Pavilion with Frei Otto in Hanover, Germany (2000).

While Ban is designing for commercial and institutional clients—such as the upcoming Aspen Art Museum in Colorado—he is inspired to help the needy in response to natural disasters. He explains that, "My work for disaster relief and commercial projects overlap. There is a different program and a different budget, but the same aesthetic." Often after a natural disaster occurs Ban will travel to the site of the calamity to ascertain first-hand what is

needed and then develop an approach to help the public. After the earthquake in Haiti, he visited the country and collaborated with university students to build fifty shelters made from paper tubes and local materials. He turned to paper tubes again to create nine temporary classrooms after the Sichuan earthquake in China and to construct the L'Aquila Temporary Concert Hall in Italy. Most recently, after the 2011 earthquake and tsunami in East Japan, he helped to provide immediate assistance with paper partitions in evacuation facilities and later temporary container housing. In each case, Ban raised money and developed simple, straightforward designs for people who couldn't afford to build for themselves.

Sometimes he is invited unexpectedly to help after a disaster strikes. This was the case in Christchurch, New Zealand, where he was commissioned to design a cathedral to lift people's spirits after the devastation of the magnitude 6.3 earthquake struck in February 2011. The existing cathedral, a symbol of the city, was severely damaged. Ban developed a soaring triangular space made of interlocking paper tubes. The cathedral will seat 700 people and is planning to break ground in April 2012.



Courtesy Shigeru Ban Architects

As a young architect, Ban recalls, "I was disappointed that architects only work for the government, the wealthy and the privileged. I wanted to help the general public and people who have no choice." So whether he's designing simple spaces for people to have privacy and personal areas, as he did for the survivors of the East Japan earthquake and tsunami, or larger public gathering spaces like the Italian concert hall or the cathedral in New Zealand, Ban brings the same dedication and innovative thinking to every project. ■

*Michael Franklin Ross, FAIA, is a principal with HGA Architects and Engineers, Los Angeles. He was 2007 Chair of the AIA Committee on Design and 2006 Chair of the AIACC Design Awards Jury. The author of Beyond Metabolism: The New Japanese Architecture, he has contributed over eighty articles to the architectural press. He has been on the faculty of Tokyo University, UCLA and SCI-Arc, where Shigeru Ban was a student of his in the early 1980s. He may be reached at [MRoss@hga.com](mailto:MRoss@hga.com).*

LEFT TOP: Ban worked with volunteers to construct nine temporary classrooms in Chengdu, China, after the 2008 Sichuan earthquake. FAR LEFT: One of 50 shelters Ban helped provide in response to the 2010 earthquake in Haiti. LEFT: Evacuees from the 2011 Japanese tsunami took shelter in facilities such as the Otsuchi High School gymnasium in Otsuchi City, Japan. Ban's partition system used paper tubes and canvas curtains. ABOVE: When the 2011 New Zealand earthquake destroyed the cathedral in Christchurch, Ban designed a temporary structure to seat 700.





# Hands-on in Haiti

How BAR Architects took a proactive  
approach to pro bono work

BY YUKI BOWMAN





## LAYING THE GROUNDWORK

In a remote, hilly region southeast of Haiti's capital Port-au-Prince, a new school is slowly taking shape. When complete, the Children's Academy will culminate the efforts of dozens of collaborators, community participants and visionaries who have come together to contribute to the country's recovery efforts from the January 2010 earthquake, which destroyed some 280,000 buildings, 4,000 of them schools. The blow to the country's already-taxed education system was substantial.

Haiti Partners, founded in 2007 and led by co-director John Engle, has been working to redress the country's education shortage through collaborations with seven local partner schools, which the organization provides with strategic planning, seed capital, teacher training and funds for building improvement. The Children's Academy will serve as the headquarters and model school for Haiti Partner's sister schools, providing elementary education for 250 students while acting as a full-time community resource with an auditorium, gardens, and computer and teacher training facilities.

Engle has extensive experience in Haitian education, but this was the first time he was building a school from scratch. Seeking guidance, Engle contacted Architecture for Humanity in late 2010. The global humanitarian

organization had been on the ground since the earthquake, working from its Haiti Rebuilding Center in nearby Pétionville. From here, staff, design fellows and volunteers coordinated long-term reconstruction efforts, providing training for local professionals, referrals for construction projects and support in establishing a construction financing system—with the goal to transfer ownership and operation to Haitian stakeholders by 2015.

## PASSION

Meanwhile at BAR Architects in San Francisco, senior associate Lisa Victor was mobilizing. Victor had been unsettled ever since news of the earthquake had reached her. "The earthquake really touched me," she explains. "I've always wanted to know more about Haiti; I had lived in Paris for awhile, where my daughter was born, and felt connected to French-speaking countries. With our economy down and everyone reevaluating their priorities, I found myself wanting to contribute."

Rather than striking out as a solo volunteer, Victor knew that BAR's resources could benefit the rebuilding effort, so she contacted Architecture for Humanity to gauge their interest in collaborating. The Children's Academy project was just seeding, making for a perfect storm of opportunity. With work to be done, and a place—the Rebuilding



LEFT: The San Francisco-based firm BAR Architects devised an on-the-ground strategy for building a school in Haiti after the January 2010 earthquake. Principal Chris Haeggglund points the way from the building site. ABOVE: Senior associate Lisa Victor, who spearheaded the project, talks with future students.





"I knew there was hope when the principals didn't ask, 'Are you crazy?' but 'How will we ensure everyone's safety?'"

— LISA VICTOR

Center—from which to do it, Victor presented BAR's management principals with a proposal: send half a dozen employees to Haiti for a rotating design fellowship. "I knew there was hope when the principals didn't ask, 'Are you crazy?' but 'How will we ensure everyone's safety?'" she recalls.

#### FLEXIBILITY

The proposal succeeded because the financial and logistical details made it viable for BAR. Of the time that each fellow would spend in Haiti, one week would draw from personal vacation time, and the difference would come from a vacation pool of donated time from the firm's other 75 employees. What remained—in addition to administrative support, airfare and a shared laptop computer—would be covered by the firm and supplemented by funds from BAR's annual art show. In turn, each fellow would pay \$25/week for lodging at Architecture for Humanity's "maison" in Haiti.

Between January and August 2011, nine BAR fellows traveled to Haiti for three weeks each, with one week of download in between, while three volunteers provided project support from BAR's San Francisco office. Cumulatively, the effort amounted to 1.25% of the firm's annual labor hours, or the equivalent of 24 hours from each employee. "When you think of distributing pro bono work in this way, it's more manageable, especially when you realize how large the payback is," Victor points out.

Working in Haiti was not always easy, and Architecture for Humanity's support—for transportation, safety, and community contacts—was critical. The experience demanded constant flexibility: "We went in there with a project schedule and milestones," says Chris Haeggund, BAR principal and one of the first fellows, "but from day one, when the site survey wasn't yet finished, we had to adjust." Another challenge was the lack of hierarchy. "Everyone had to be their own boss," adds Victor. "Coordination was tricky, but the inefficiency was also the learning opportunity."

#### COMMITMENT

Ultimately, the flexible design process facilitated client and community involvement. "We weren't there just to throw up some boxes, but to create something uplifting that could anchor the community," says Haeggund. This meant participating in numerous community design meetings and site visits with Haiti Partners to better understand its pedagogy and use of a collaborative communication tool, known as Circles of Change, to foster participatory leadership.

The school's master plan and building design reflects this ideal. Eight classroom buildings employ a 2,500-square-foot module wrapped in a broad arcade, which connects to the central courtyards forming the heart of the school. The modules provide architectural continuity, while louvers and local *crepisage* create color and variation to playfully

distinguish between grades. MEP solutions are simple and sustainable by necessity, incorporating composting toilets, solar panels and a site water strategy donated by Sherwood Design Engineers.

Perusing the firm's Haiti blog, *BAR Rebuilds*, each fellow's unique learning experience comes through clearly. Many returned with an invigorated belief in architecture's potential, and the fellowship has bolstered BAR's firm-wide culture of giving. "Everyone is proud of this project, and we've had new employees join us precisely because of it," says Victor.

Is the model transferable? BAR had some advantages, but the key elements—passion, flexibility, and commitment, along with Architecture for Humanity's involvement—are extendable, and the organization is hoping for a repeat. "There are a few improvements we could make, in terms of overlapping volunteers for an easier transition, but there are no major roadblocks to future partnerships," believes associate Karl Johnson. And firms don't have to travel to Haiti to contribute; backyard opportunities abound.

The Children's Academy broke ground on September 25, 2011, and Phase 1A—four classrooms for fifty children—is scheduled to open in September 2012. "The energy is incredible," reports Engle from Haiti. "We've employed 30 to 40 local citizens for construction, and another 54 community members participate in weekly Circles of Change training, in anticipation of the school's opening." Lisa Victor watches the project unfold from her San Francisco office with a renewed sense of possibility. "It's been amazing to watch this crazy idea become a reality. We're so lucky that everything aligned." Victor is humble, but other firms who take BAR's lead can be grateful for her vision. ■





## PROJECT FACTS

**PROJECT:** Haiti Partner's Children's Academy

**CLIENT:** Haiti Partners, John Engle

**LOCATION:** Rue Borno Prolonge #32B,  
Bawosya, Haiti

**START DATE:** January 17, 2011

**COST:** Building 1, \$200,000 (est.);  
entire project \$2.5-\$3M (est.)

**CONSTRUCTION MANAGER:** Micanol Gracius

**SURVEYOR:** Erlich Jaques, Geometrix

**ENGINEERING:** Michael Magnier,  
Geotechnical Engineer

**CIVIL ENGINEER:** John Leys & Tina Stimpson,  
Sherwood Design Engineers

**LANDSCAPE ARCHITECT:** Laura Jerrard and  
Tori Johnson, Lutsko Associates,  
Landscape Architects

**CONTRACTOR:** M+L Construction

### DESIGN TEAM (IN SEQUENCE OF PARTICIPATION):

#### BAR ARCHITECTS

##### IN HAITI

Lisa Victor + Chris Haeggglund  
Douglas Oliver  
Jonathan Hradecky  
Lisa Majchrzak  
Jeremy Butler-Pinkham  
Stephanie Amend  
Thomas Crowley+ Will Spurzem

##### FROM SAN FRANCISCO:

Ying Ying Yong  
Mirba Estrellas

#### SUPPORT:

Shelley Young  
Linda Crouse

#### ARCHITECTURE FOR HUMANITY:

Stacey McMahan (USGBC design fellow)  
Kate Evarts (design fellow)  
Rick Ehlert (structural engineer)



OPPOSITE: Haeggglund and Victor review plans with a local architect. TOP LEFT: Construction began in September 2011.

TOP RIGHT: The site plan illustrates the eight classroom buildings framing a central courtyard. ABOVE: Louvers and *crepisage*,

plaster, will define the classrooms. BELOW: Construction on the first phase is scheduled to be completed in September 2012.





# Marking Time at Ground Zero

A decade after 9/11,  
a reimagined World  
Trade Center site is  
slowly taking shape

BY PETER SLATIN

THE ROAD TO REBUILDING THE 16-ACRE WORLD TRADE CENTER SITE OVER THE PAST DECADE HAS proved long and painful, and though the new vision is slowly being realized, the finishing point must still be measured in multiple years. That time span is a fitting tribute to and a clear reflection of the triumphs and perils present in the collision of democracy and capital in the U.S. today. Had all proceeded with the sweet smoothness envisioned by both government and business early on, and had the site been rebuilt without conflict or controversy—whether as a huge memorial park, a Twin Towers facsimile or any of the thousands of other submitted proposals, including the one that is on its way to fruition—then we would be redeeming the ideals of monolithic government control that the attackers revered. Instead, we have endured our messy journey toward reconstruction. Whatever you might think of what is emerging from the ground and taking shape below grade, the length and complexity of the undertaking are elements surprisingly in its favor, and ours.





What is emerging from the ground are five new towers, the National September 11 Memorial and Museum at the World Trade Center, a transportation hub, a performing arts center and 550,000-square-feet of retail space. Architect Daniel Libeskind designed the master plan in 2003 and has been collaborating with the Port Authority of New York and New Jersey, the Lower Manhattan Development Corporation, Silverstein Properties and world-class architects from Santiago Calatrava to Frank Gehry to Norman Foster to realize the pieces within it. "It's the most exciting and complicated project I've ever worked on," says Kenneth Lewis, managing director at Skidmore, Owings & Merrill (SOM). SOM's consulting design partner David M. Childs is designing Tower 1 (formerly known as the Freedom Tower), which will anchor the southwest corner of the site and rise to 1,776 feet in accordance with Libeskind's plan. "It has a very different dynamic than anything else, Lewis notes." As Tower 1 and the others go up, the site remains in service as a major mass-transit point. "There are multiple large groups working and trying to solve different complex problems," adds Lewis, all while "the eyes of the world are upon us."

Indeed they are, and there's a lot to behold. As of early 2012, the memorial—two pools encircled by waterfalls set within the footprints of the Twin Towers—are open to the public but far from finished. The museum, with an entrance designed by the Oslo firm Snøhetta, is on hold because of a standoff over money issues between the Port Authority of New York and New Jersey, which owns the entire site, and the foundation in charge of the museum. Fund raising continues as work proceeds on the Gehry Partners-designed performing arts center, and the Port Authority Trans-Hudson (PATH) transit hub by Calatrava proceeds as well, though five years behind schedule and far over budget.

The towers are steadily climbing as well. Tower 1 is rising strong with steel at 90 stories (14 more to go), cement at 83 stories and cladding at 69 stories. The building is mostly leased to Condé Nast Publications and Port Authority. The third tower, by Richard Rogers, will be capped at seven stories by developer Silverstein Properties, in an effort to allow

above-ground retail to open while awaiting office tenants, before renewing construction. The fourth tower, designed by Fumihiko Maki, is half leased to public-sector tenants, while the Foster + Partners-designed Tower 2 will be the last to rise. The slab is in place, and the work is proceeding slowly, but it has no tenants yet.

As buildings go up, there has been plenty taking place below ground as well. Mostly completed at this point, the below grade work—a retail complex, underground connections, parking facilities and building services—has

agrees. "Of course there's bickering, but that's to be expected on something this complex—and it's sometimes the way differences get resolved." Demerjian recalls with fondness an early period in design development when architects from all of the firms involved in the office projects would gather in a so called "design bunker" on the tenth floor of Silverstein's rebuilt 7 World Trade Center under a huge countdown clock. "Someone would say, 'Draw!' and off we would all go, drawing frantically."



OPPOSITE: The 16-acre World Trade Center site as photographed on August 3, 2011.

ABOVE LEFT: The site five months earlier on March 3, 2011. ABOVE RIGHT: Tower 1 rises above Lower Manhattan's future skyline.

revealed one sticking point. The temporary PATH station, which will be in place for perhaps three more years, is blocking the loading dock entrance to Tower 1. That one issue could delay the fit-out and move-in for Condé Nast, whose one-million-square-foot presence is already transforming leasing discussions. As that set-back is being resolved, the pedestrian walkway connecting PATH train riders from New Jersey to the new Fulton Street Terminal has been completed. The mass-transit project, built by the Metropolitan Transportation Authority, is separate from but adjacent to the WTC site.

"Overall," says Lewis, the huge collaborative effort is "very positive." That could be in part because the various teams "are rarely together. Much of the work that required coordination throughout the site was on the below grade areas, and much of that is completed." Serge Demerjian, who left SOM to oversee the office developments for Silverstein Properties,

Despite understandable impatience from most quarters, the stretched-out process—which is sure to extend at least through mid-decade—is doing us a favor by allowing us to adapt to a slowly evolving cityscape at the same time that the city around Ground Zero is also being transformed. In the end, the two will blend together far better than they would have had the redevelopment effort proceeded at a Shanghai-like clip, producing a jarring array of mostly empty office towers offered up clean and bright to the public. Now, as the Port Authority continues to struggle with private and public sectors as well as cultural partners alike—it is just one of nineteen public entities involved in the project—all the constituents of the project, including tenants, tourists, visitors, observers and even those who will never see it in person but will surely know it's there, will have the time to get used to it. After all, it is going to be with us for a long time to come. ■



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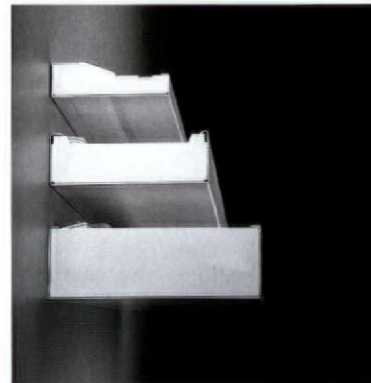


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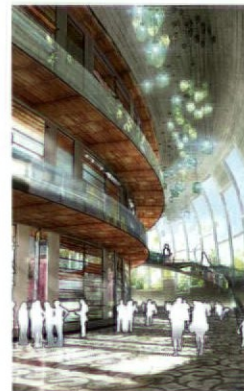
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# CREDITS

## Fragile Shelter

SAPPORO, JAPAN

ARCHITECTURE: Hidemi Nishida Studio  
INTERIOR DESIGN: Hidemi Nishida Studio  
LANDSCAPE: Hidemi Nishida Studio

CONSTRUCTION: Hidemi Nishida, Genki Fujita, Akira Nagase  
PHOTOGRAPHER: Anna Nagai

## Digital Origami Emergency Shelter

SYDNEY, AUSTRALIA

ARCHITECTURE: LAVA-Laboratory for Visionary Architecture - Chris Bosse, Tobias Wallisser, Alexander Rieck  
INTERIOR DESIGN: LAVA-Laboratory for Visionary Architecture  
EXHIBITION ORGANIZATION: Jun Sakaguchi Architect and www.theagency.com.au/  
PROJECT MANAGEMENT: www.redwoodprojects.com.au  
RECYCLED PLYWOOD: www.chhwoodproducts.com.au  
CNC CUTTING: www.stagingrentals.com.au  
SIGNAGE AND GRAPHIC: www.hesse-design.de  
STUDENT HELPERS FROM: UNSW, UTS, University of Sydney

LED LIGHT: www.light2.com.au  
POWER: www.lionbatteries.com.au  
ENGINEERING: www.greenleafengineers.com/  
BUILDER AND PROJECT MANAGEMENT: www.Keystoneprojectsgroup.com.au  
CLIENT: Emergency Shelter Exhibition, Customs House, Sydney  
LAVA TEAM: Jarrod Lamshed, Verena Hoch, Klaus Hesse, Michael Mader, Angelo Ungarelli, Teresa Goyarrola, Chang Liu, Phillip Scherl, Guido Rivai, Sarah Regan  
PHOTOGRAPHER/RENDERINGS: Klaus Hesse and Peter Murphy

## Pigirm Route Shelters

JALISCO, MEXICO

ARCHITECTURE FIRM: Luis Aldrete Arquitectos  
INTERIOR DESIGN FIRM: Luis Aldrete Arquitectos  
LANDSCAPE FIRM: Luis Aldrete Arquitectos

CLIENT: Secretaría de Cultura del Estado de Jalisco  
PHOTOGRAPHER: Francisco Perez

## FoldFlatShelter

DESIGN: form-al, Adrian Lippmann  
FACADE MATERIAL: DIBOND, 3A Composites GmbH  
FLOOR MATERIAL: HeliPan AL, Heli-Leichtgerüst AG / HeliGroup

MANUFACTURER: Present. Die Werbe-GmbH  
PHOTOGRAPHY: Adrian Lippmann  
RENDERINGS: Adrian Bachmann

## Softshelter

DESIGN: Stephanie Forsythe + Todd MacAllen of molo

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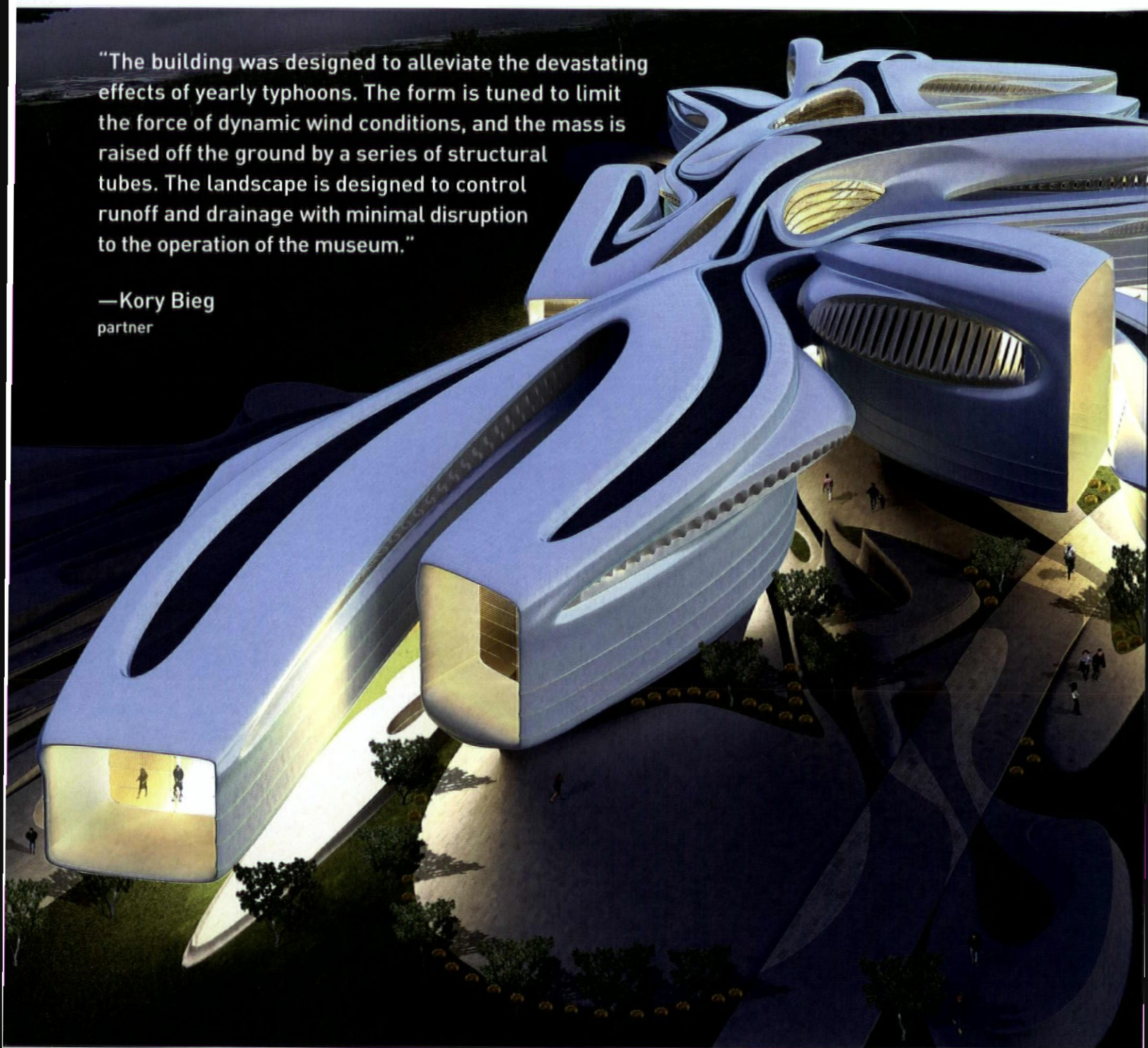
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—Kory Bieg  
partner



FIRM: OTA+ | PROJECT: Competition entry for the New Taipei City Museum of Art | LOCATION: Taipei, Taiwan |  
DESIGN TOOLS: 3D Studio Max, Parametric Array





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